

Control of Work: The Digital Way.



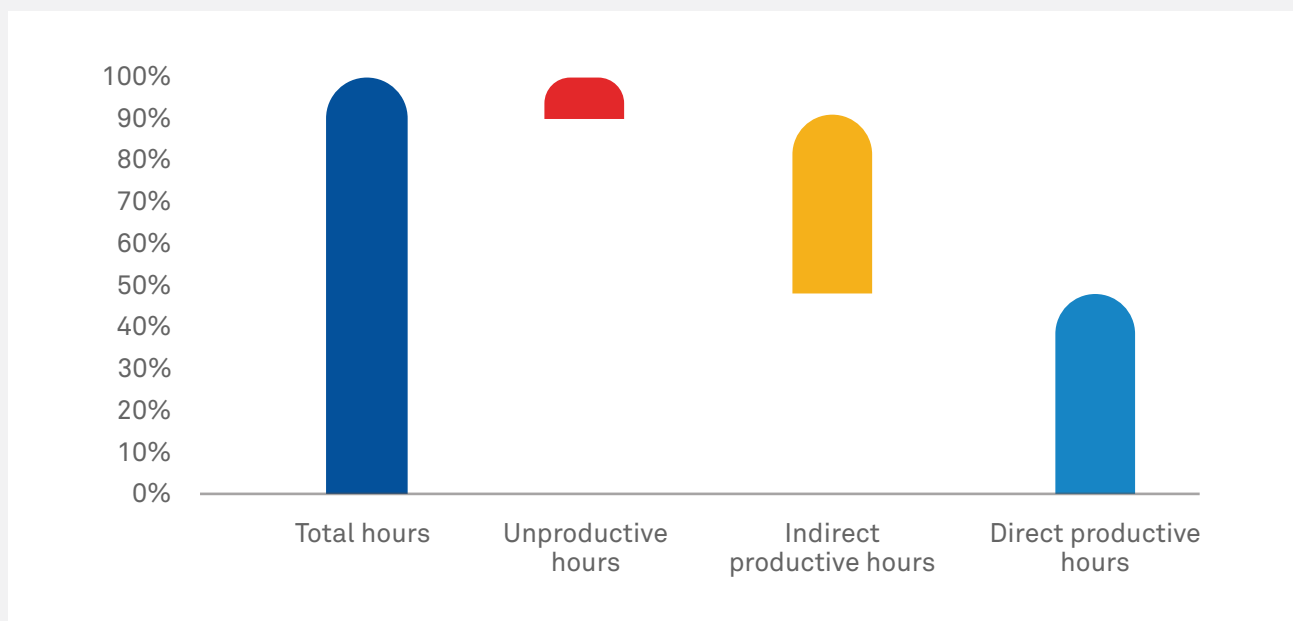
Abstract

Currently, the oil and gas industry focuses on safety, regulatory compliance, and the need for new business models. New energy sources, combined with stricter regulatory requirements, are driving the global demand for sustainable processes, making HSSE (Health, Safety, Security and Environment) a priority in exploration, production and operations. It is therefore imperative that any activity carried out is managed by a comprehensive Control of Work (CoW) process which would ensure operational safety.

This paper explores how an organization could approach making the Control of Work process digital while improving safety, asset availability and operational performance. It also looks at integrating Control of Work with Maintenance Management Systems, ERP and Engineering Data Management Systems to increase its effectiveness.

Introduction

Control of Work is a diverse and complex process with rigorous control measures. Typically, in the oil and gas industry, work such as equipment maintenance, construction, remediation, facility maintenance, and demolition are carried out. Due to the hazardous nature of these activities, and the possibility of accidents and danger to human life, there is an ever-growing need for compliance with processes and regulations. The current CoW process in most companies is either manual or a standalone system which is followed by an employee at his/her work desk, while the actual work happens in the field.



Source: Profion

It is observed that:

- In on-site maintenance, only 48% of total hours are directly productive (hands-on tool time)
- Of the total, approx. 42% are indirect productive hours
- Most of those are lost in traveling, waiting and administration
- Which in turn are mostly caused by the lack of immediate, automated and reliable exchange of data and decisions between CoW constituents

This reduces any incentive to follow the process, and bypassing it altogether becomes common practice.

It also prevents organizational learning and increases incident re-occurrence. Currently, the typical way of doing this is through meetings and internal communication, between the team leader and the working team, with the work party remembering the details and precautions to take. This is not an effective way of preventing the incident from recurring.

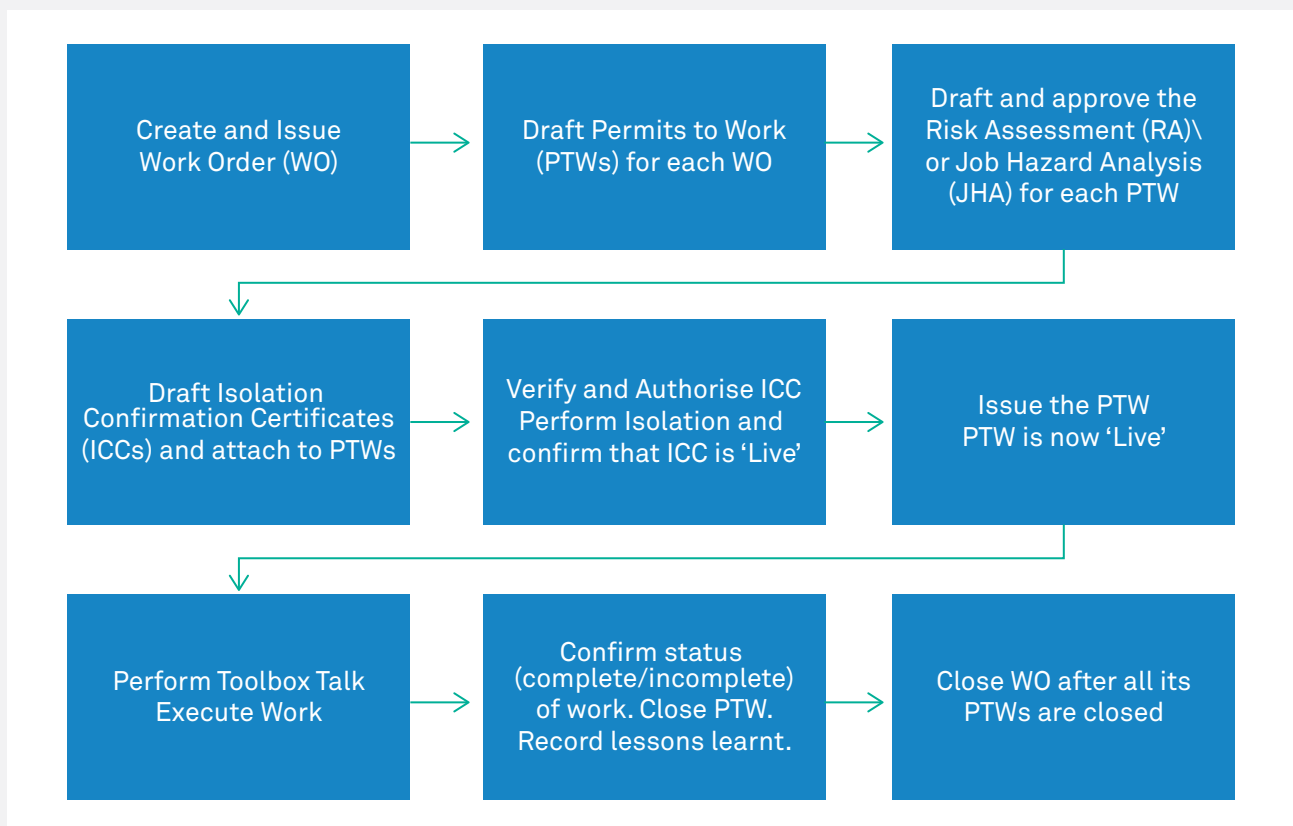
It is difficult for employees working at remote locations to identify the scope, hazards, controls,

barriers, mitigations and isolations required, and have access to a system they can use for regular communication.

The manual or standalone nature of the process doesn't allow effective SIMOPS (SIMultaneous OPerationS) required mostly during turnarounds.

Challenges in the Control of Work process

A typical permit to work process involves the following steps:



As we can see, the process involves multiple departments and different individuals (often contractors as well). In such cases, it becomes important that all personnel understand and follow the Control of Work process in a short time, often in a running plant. Delay in carrying out the work results in plant unavailability, thereby negatively impacting production. At the same time, doing it in haste without proper precautions can cause accidents and even lead to fatalities.

Hence, it becomes imperative that the CoW system is not just task-based but provides a

framework for hazard and risk assessment in which responsibilities and accountabilities are clearly defined. It should also be possible to verify that the CoW roles are fulfilled by individuals who possess the required minimum training.

The system should maintain an audit trail as well and provide a framework for lessons learned and improvement.

The effectiveness of risk assessments will be greatly improved by collating and rendering the following information to the permit requestor during risk assessment:

- Hazard checklists
- Procedure documents
- Isolation diagrams
- Method statements
- Historical permits, isolations and incidents

The process starts with creating a Work Order in the central EAM (Enterprise Asset Management) system and ends when it is closed in EAM. It's important that Work Orders (WOs) for planned work are generated in advance and there is smooth integration amongst the Work Order information system, the Incident Management System, the Document Management System and the Personnel Management System.

Most of the time, the Control of Work process being followed is not ideal. Typically, the process lays emphasis on completion of the task instead of identifying and mitigating the hazard.

- The process is typically not compliant with incident analysis, internal and external inspections
- It's not integrated with other systems and people need to enter data in multiple places
- It's not possible to search historical Permits and Isolations
- Authorization and qualification verification of the person doing the work is difficult
- It doesn't give a good view of SIMOPS in highlighting active and planned Permits and Isolations, especially during Turn Around
- Mostly, a new permit needs to be created from scratch. Also, even a desktop-based solution results in the user needing to return to his

workstation to enter details and make a decision. It becomes quite laborious, resulting in gaps in following the Control of Work process and is also quite inefficient.

- Possibility of changing or removing secured protection i.e. Isolations
- Different third-party vendors/contractors may not know how to following the process

Current Control of Work processes mostly are either manual or standalone systems and have many drawbacks such as people manually filling in Permits which need to be rectified and are often prone to clerical errors. Also, the standalone systems do not help in getting the complete picture.

These manual or semi-automated processes are also time consuming and laborious to follow which unfortunately delays the maintenance activity.

Approach to digitalise control of work

Most organizations have set and benchmarked their Control of Work processes to a certain suitable standard. Changing these processes is a big organizational change, - something which is not easy and certainly not possible to do frequently.

It's very important to thoroughly understand an organization's need and establish a suitable Control of Work process to plan work, identify hazards, assess risks and put in place measures to reduce risk and hazards. This will not only help to complete the work safely but also reduce unplanned outages and any environmental damage.

Hence the journey of implementing CoW solutions starts with reviewing the process, till a solution implementation is found.



CoW process review is done by baselining the input from different stakeholders; by fundamentally analyzing:

- Value Stream Mapping
- Redundant work processes and activities
- Inefficient processes
- Manual processes and hand-offs.

This is done through Design Thinking workshops with the concerned stakeholder to identify:

- User Journey Maps to understand As-Is Process
- Identify and Understand the Business Problem, Issue & Goals
- Maturity and Change Readiness – People, Process, Technology.



What

User profiling, identification of gaps in processes and systems, develop insights, opportunity statements with framework for prioritization



Who

Plant Maintenance, Operations, IT, HSE Staff and Supervisors, Person requesting permit, Permit Verifier, Permit Authorizer, Permit Issuer, Permit Holder).



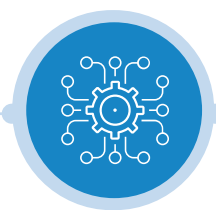
Where

Face to face interviews and workshops, HSE, training/ simulation sessions, office based meetings, plant visits



Work Processes & Journeys

- Profile relevant users and journeys
- Understand work processes
- Capture voice of users
- Focus on inefficiency, effort intensity and manual activities, process and data integrity, non-value adding activities



Analysis and Optimization

- Analyze gaps and inefficiencies
- Benchmark with research output (internal and external)
- Develop and validate hypothesis
- Focus on both business and IT transformation/modernisation aspects



Insights and Prioritisation

- User focused and Design led
- Develop opportunity statements
- Provide framework for prioritization
- Develop recommendation at system strategy level
- Outline implications for change management

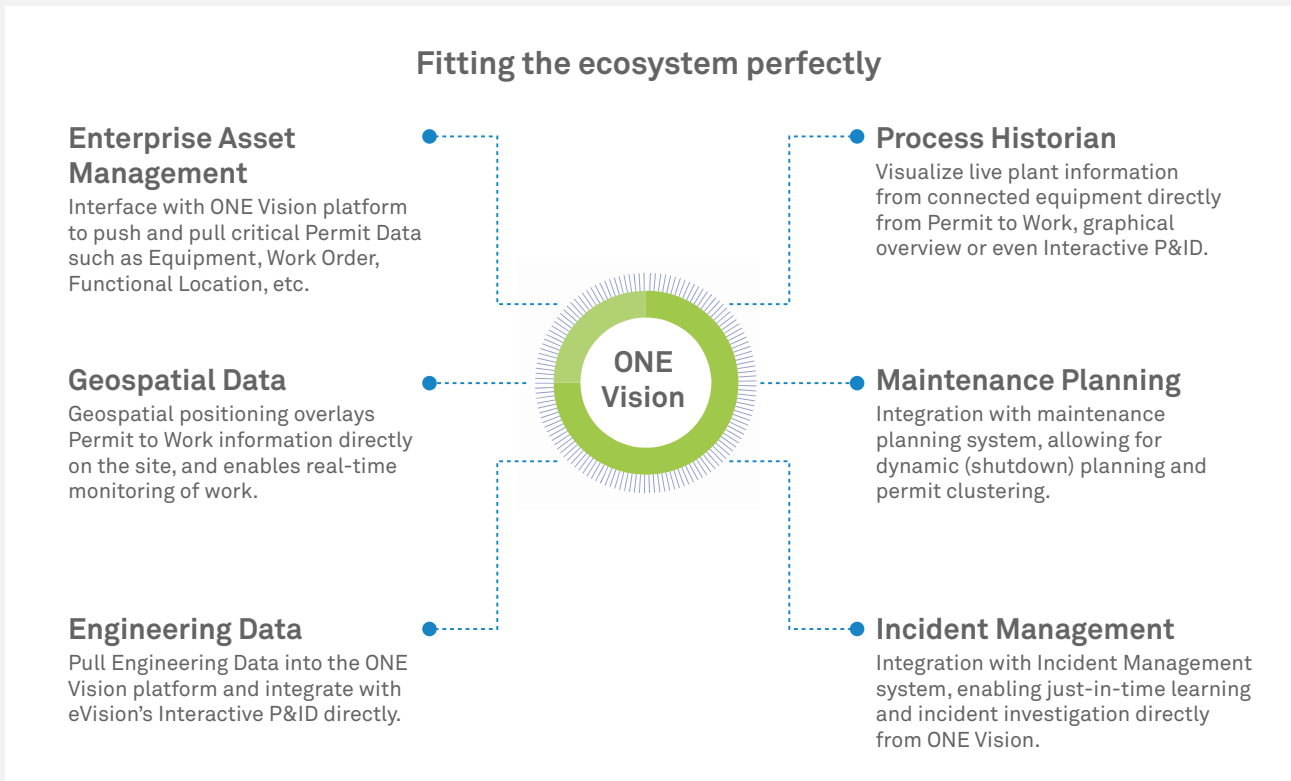
Typical implementation

Now the challenge is how do we digitally enable such a complex, diverse and specialized operation with a solution that is resilient, simple, effective and affordable?

Technology provides an opportunity to improve processes, make it compliant with industry

Control of Work practices and improve the engagement experience of users.

With the Permit Vision solution from eVision, one can experience the final answer in daily maintenance & operations safety and efficiency.



The system of reference (Control of Work) is at the heart of operations and integrates with systems like Enterprise Asset Management (EAM), Maintenance Planning System, Incident Management System, Process Historian, Engineering Database Management System, etc.

Automated interfaces between the Work Order application and CoW system eliminates duplicate data entry, the possibility of error and associated administrative burden by integrating with:

- Work Order information
- Incident Management System: past incident information for similar work/equipment
- Document Management System: for relevant procedures

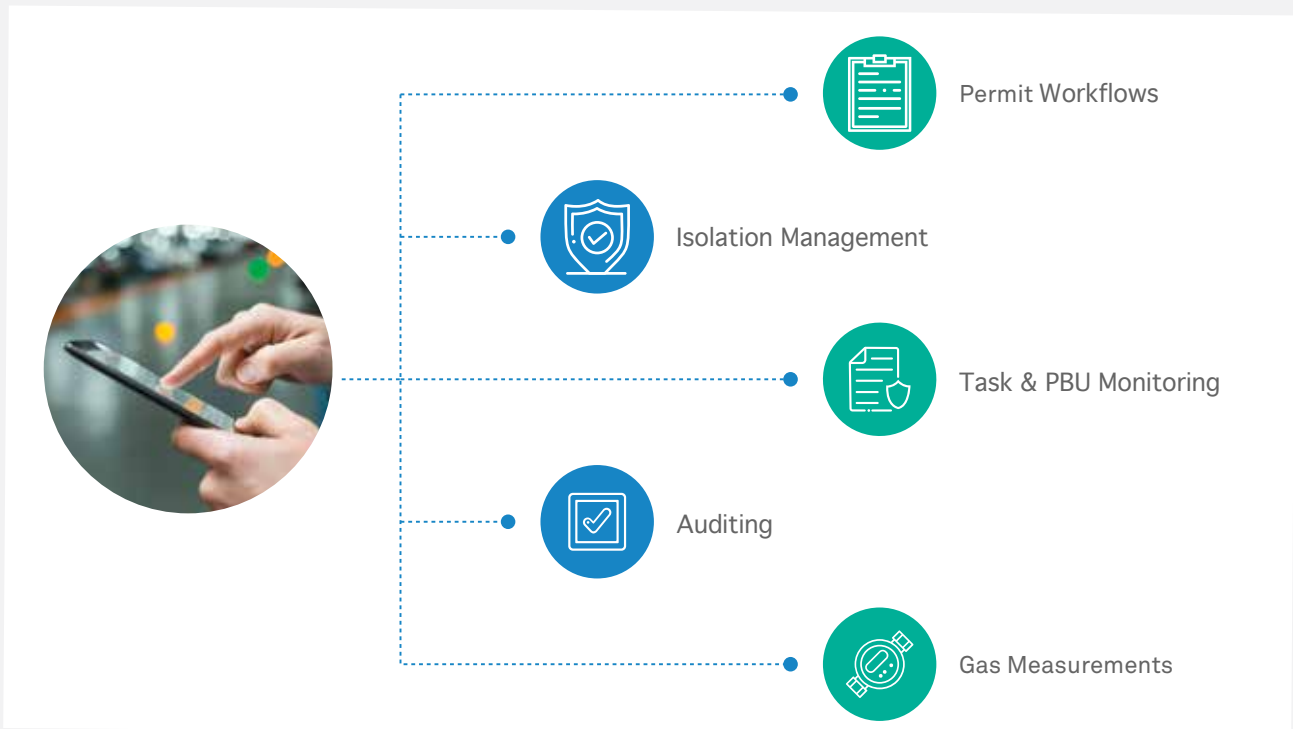
- Training records/authorization records: training records in order to ensure that each individual involved in the CoW process is qualified for the role they play

A Digital CoW process helps in speeding up the process in creating permits by allowing:

- The ability to copy and modify permits and isolation certificates, eliminating the need to enter all the details repeatedly
- Templates for permits and isolations that are pre-authorized and pre-approved, thus saving time and effort needed for repeated authorizations and approvals

But it's not enough just to take the CoW process online. It's very important to make the process mobile enabled as well. Permit Vision offers fit-for-purpose applications specifically built for

mobile devices. With ATEX compliant phones and tablets, a field engineer can carry out permit process activities directly at the worksite.



Highlights

- Integrated Permit to Work, Risk Assessments, and Isolation Management out-of-the-box
- Bidirectional integration capability with leading MMS and ERP systems, planning solutions, data visualisation tools and much more
- Mobile apps, use of interactive P&ID
- Manage Risk effectively using Dynamic Barrier Management functionality

Benefits

- Easy-to-use tool made with the end-user in mind, with best-practices from the world's leading hazardous industries organisations
- Electronic review, approval and assignment of tasks to various roles in the Control of Work process
Increase productive hours significantly, leading to quicker ROI
- Reduce accidents and incidents through increased discipline, compliance and awareness
- Direct insight into key reporting KPIs, hassle-free archiving and end-to-end process control

Conclusion

Digital Control of Work (DCW) helps in increasing Wrench Time through streamlined, compliant processes; achieves safety goals by providing staff and assets with integrated awareness, graphical oversight, and risk mitigation tools, and decrease in MTTR.

With the DCW solution, you can share lessons learned at the place of execution of task, increasing the value of information so that the team can take steps to prevent the risk.

DCW and APM (Asset Performance Management) solutions can be integrated to provide equipment data to operators with the relevant insight.

The mobile solution also helps in identifying the risk hazards and the precautions that should be taken to avoid those, by providing information and videos on handheld devices, which conveys the sensitivity of the task being performed.

This reduces time and effort, and encourages people to follow the process instead of considering it a laborious, time-consuming activity and helps to optimize workforce utilization, increase operational safety and make the operational processes easier to audit.



About the author

Ashish Khangar is Senior Consulting Manager with Wipro's ENU downstream Center of Excellence. He has experience spanning sectors like Oil and Gas Downstream, Manufacturing, Mining and Metals.

He is a subject matter expert in Manufacturing Execution System (MES) landscape, ISA 95 MOM, and TOGAF 9.1 Certified Architect. With his business functional and technical knowledge, he offers clients solutions in Integrating Operational Technology with Information Technology, helping to make the plant operations efficient, sustainable and reliable.

He helps businesses drive digital transformation to deliver operational performance by leveraging Digital and IoT solutions based on Automation, Mobile, Analytics, and Cloud: which can not only improve efficiency in process industries but also improve the way these hazardous industries operate on a global and local scale.

He can be reached at: ashish.khangar@wipro.com



Wipro Limited

Doddakannelli, Sarjapur Road,
Bangalore-560 035, India

Tel: +91 (80) 2844 0011

Fax: +91 (80) 2844 0256

wipro.com

Wipro Limited (NYSE: WIT, BSE: 507685, NSE: WIPRO) is a leading global information technology, consulting and business process services company. We harness the power of cognitive computing, hyper-automation, robotics, cloud, analytics and emerging technologies to help our clients adapt to the digital world and make them successful. A company recognized globally for its comprehensive portfolio of services, strong commitment to sustainability and good corporate citizenship, we have over 175,000 dedicated employees serving clients across six continents. Together, we discover ideas and connect the dots to build a better and a bold new future.

For more information,
please write to us at
info@wipro.com

